

4.15 IMPACTS ON EMERGENCY MANAGEMENT

The Proposed Action and its alternatives could affect emergency management systems. Each alternative would produce direct impacts on hurricane evacuations due to an increase in employees and visitors; fire response to casino resorts; and hazardous material transport accident evacuations due to an increase in employees and visitors. The ROI for this analysis includes two areas: 1) the sites of Alternatives 1, 2, 3, 4, and 5, and 2) Harrison County. In addition to this emergency management review, a review of coastal processes, including the vulnerability of the sites during storm events, is presented in Section 4.1. Additional information on fire services and emergency medical services is presented in Section 4.12.

4.15.1 Impacts on Hurricane Evacuations

The Proposed Action and its alternatives would increase the clearance time for evacuating vehicles from the three-county region. This impact would have two components. First, the proposed addition of casinos and hotels would occur in areas that are vulnerable to hurricanes and would require evacuation for most, if not all, hurricanes. Second, in addition to the construction of new casinos, the Proposed Action and its alternatives would result in the construction and occupancy of approximately 10,800 new housing units dispersed across the three-county region.

As discussed in Section 4.11, these housing units would be a small fraction of the overall growth in housing throughout the study area. Given the wide spatial dispersion of new housing in the three-county region, it is expected that comparatively few of these locations would be vulnerable to hurricanes and subject to evacuation orders. A full update of the region's hurricane evacuation study would be necessary to define the overall hurricane evacuation needs of the Mississippi Gulf Coast, given the rapid growth of population and housing that has already occurred since the advent of the casino industry in the mid-1990s. Consequently, the following discussion of impacts on hurricane evacuations addresses only the first impact: the impact of evacuating the casinos and hotels proposed for construction along the coast.

Alternatives 2, 3, 4, and 5

Since Alternatives 2, 3, 4, and 5 have similar program elements (e.g., equivalent numbers of hotel rooms and gaming space), the number of people to be evacuated under these alternatives would be the same. In addition, the evacuation routes would be the same for each alternative. Therefore, the impacts on clearance time for each storm scenario for Alternatives 2, 3, 4, and 5 are considered together.

Table 4.15-1 summarizes the number of hotel rooms expected to be evacuated under Alternatives 2, 3, 4 and 5; the maximum number of people assumed to seek public shelter; the number of casino-related vehicles evacuating; the number of vehicles passing through the critical link; and an estimate of the impact of these additional vehicles on the clearance time for Harrison County. The net increase in clearance time attributable to Alternatives 2, 3, 4, and 5 over the No-action Alternative is shown in Table 4.15-1. These times should be added to the clearance times for any

future re-study of the Biloxi region's hurricane evacuation time that does not assume the completion of the Proposed Action or its alternatives.

Currently, there are 500 hotel rooms in the No-action Alternative, and these are already accounted for in the latest evacuation study. It is assumed that most employees would return home following an evacuation order and eventually evacuate from their residential zones, so employee evacuation is typically not included with hotel guest evacuation from a hotel or casino.

Table 4.15-1
Hurricane Evacuation Data for Alternatives 2, 3, 4, and 5*

Evacuation Scenario	Number of Evacuating Hotel Rooms	Persons Using Public Shelters	Evacuating Vehicles Generated by Alts. 2-5	Percent of Evacuating Vehicles at Critical Link**	Increase in Vehicles at Critical Link	Net Increase in Clearance Time (hrs.) Caused by Alts. 2-5
Category 1-2 Intensity						
<i>Peak Season</i>						
Slow Evacuation	6,698	1,340	7,033	48.20%	3,390	1.41
Medium Evacuation	6,698	1,340	7,033	46.69%	3,283	1.37
Fast Evacuation	6,698	1,340	7,033	45.67%	3,212	1.34
<i>Off-Peak Season</i>						
Slow Evacuation	2,115	424	2,221	47.53%	1,056	0.44
Medium Evacuation	2,115	424	2,221	45.75%	1,016	0.42
Fast Evacuation	2,115	424	2,221	44.56%	990	0.41
Category 3-5 Intensity						
<i>Peak Season</i>						
Slow Evacuation	6,698	1,340	7,033	69.77	4,907	2.04
Medium Evacuation	6,698	1,340	7,033	68.86	4,843	2.02
Fast Evacuation	6,698	1,340	7,033	68.23	4,799	2.0
<i>Off-Peak Season</i>						
Slow Evacuation	2,115	424	2,221	66.36	1,474	0.61
Medium Evacuation	2,115	424	2,221	65.32	1,451	0.60
Fast Evacuation	2,115	424	2,221	64.87	1,441	0.60

*Assumptions: 7,050 hotel rooms, 2 persons per hotel room, 30% off-peak occupancy rate, 95% peak occupancy rate, 10% of evacuees using shelters, 1.05 vehicles per hotel room, capacity of critical link is 2,400 vehicles per hour. These are increases that would be applied to the 1997 Coastal Hurricane Evacuation Clearance Time Update Technical Memorandum (Update Report) (USACE, 1997).

**The "critical link" is a bottleneck or road section that would reduce evacuation time if physically improved or bypassed in some way.

Source: USACE, 1997; staff analysis.

The assumptions for this analysis are based on data and assumptions presented in the Mississippi 1997 Coastal Hurricane Evacuation Clearance Time Update Technical Memorandum (Update Report) (USACE, 1997). The percentage of vehicles at the critical link is developed by dividing

1 the total number of vehicles evacuating from Table 3.15-1 by the percentage of vehicles at the
2 critical link shown in the table. The increase in vehicles at the critical link is evacuating rooms
3 multiplied by the percentage of vehicles at the critical link, and the net increase in clearance time
4 is the number of vehicles at the critical link divided by 2,400 vehicles per hour. The resulting
5 additional clearance time would be added to the clearance time from the most recent evacuation
6 study. The 1997 Update Report reported evacuation times varying from 8 to 23 hours, depending
7 on the storm scenario that is most appropriate (USACE, 1997).

8 9 *No-Action Alternative*

10
11 Under the No-action Alternative, some facility rehabilitation and additions may occur at the
12 existing Broadwater site. In addition, it is assumed that the resident and population growth on
13 the Biloxi peninsula will continue. Therefore, the clearance time for Harrison County will
14 increase as a result of this growth in permanent and visitor population in the areas that are
15 vulnerable to the effects of a hurricane. The numbers identified in Table 4.15-1 for Alternatives
16 2, 3, 4, and 5 are in addition to the probable increases under the No-action Alternative. Although
17 the numbers in the table "double-count" the 500 existing rooms on the Broadwater site, these
18 existing rooms account for only 7 percent of the total rooms in the table and would have an
19 insignificant effect on the overall calculations.

20 21 *4.15.2 Impacts on Boat Evacuations*

22
23 Because the Proposed Action would include marina slips, an issue related to emergency
24 management is the evacuation of boats from marinas in the event of a storm.

25
26 The U.S. Coast Guard does not require that marinas evacuate in case of a major storm. However,
27 according to the Biloxi Port Commission, which is responsible for three public marinas, it is their
28 policy that all boats evacuate when a hurricane warning is issued. The private marinas, including
29 the Broadwater marina, have agreed to follow this policy as well. Most boats remain in the water
30 and are moved to the Back Bay, rivers, and estuaries. Some owners of small boats put them on
31 trailers and remove them from the water. Commercial boats are usually moved before the
32 required evacuation. There were no problems associated with this process during the Hurricane
33 George evacuation (personal communication, Larry Manual, Director of Biloxi Port
34 Commission, Biloxi, MS and Robert LeBeau, EDAW, Atlanta, GA, February 29, 2000).

35 36 *Alternative 2*

37
38 Safe harbor criteria are based on acceptable federal and industrial standards for maximum
39 allowable wave agitation in a marina during a storm event. The standard is three feet or less
40 (ASCE, Canadian Government). The marina proposed under Alternative 2 would provide a safe
41 moorage wave climate (wave heights less than two feet) during storm events up to a Category 3
42 hurricane event based on the Saffir-Simpson scale.

43
44 In the case of hurricane events up to Category 3, this aspect of Alternative 2 constitutes a public
45 benefit not available with the other alternatives. Currently, marina operators in the

1 Biloxi-Gulfport area customarily direct boats in their care to evacuate to sheltered areas of the
2 Back Bay during hurricane events. However, the large protective breakwater structures
3 surrounding the marina basin in Alternative 2 would provide wave protection not afforded by
4 other marinas in the Biloxi-Gulfport area, allowing boat owners the option not to evacuate and
5 offering available slips as a safe harbor to other boats. This would reduce the congestion and
6 safety problems caused by the emergency movement of boats around the Biloxi peninsula and
7 also reduce the risk and inconvenience to the boat owners.

8 9 *Alternatives 3, 4, and 5 and the No-Action Alternative*

10
11 Under Alternatives 3, 4, and 5 and the No-action Alternative, marinas would not offer the same
12 protection during a hurricane as that provided by the marina proposed for Alternative 2. Current
13 evacuation procedures would apply under these alternatives, with boats having to leave the
14 marinas to find safe harbor during a hurricane.

15 16 *4.15.3 Impacts on Fire Response to Casino Resorts*

17
18 The primary risk factors of fire safety are loss of life and loss of property. Loss of life is the
19 uppermost concern of fire prevention and fire suppression measures.

20 21 *Alternatives 2, 3, 4, and 5*

22
23 Development under Alternative 2 would be designed to reduce the risk of fire through several
24 means:

- 25
26 • Use of fire retardant and fire resistant materials — Structural members, finishes, and
27 furnishings would be selected, constructed, and installed in accordance with requirements of
28 the National Fire Protection codes.
- 29
30 • Training — Maintenance, housecleaning, food service and security would be trained in
31 proper storage and handling of flammable materials and other activities that could contribute
32 sources or fuels to fire. Security personnel would be trained in proper screening of high-risk
33 visitors and activities within the development.

34
35 Fire suppression would be designed into virtually every constructed element of the Proposed
36 Action. The casinos, hotels, and other densely occupied areas of buildings would be protected
37 with sprinkler fire suppression systems. Approved fire alarm systems, fire corridors, fire stairs,
38 elevators, and fire doors with automatic operation would be constructed per code and properly
39 marked. Fire exits would lead guests from elevated floors to safe areas of horizontal refuge at
40 ground level within the parking structures, where they could be protected from exposure to
41 smoke and fire and directed to evacuate over an acceptable period of time. Hotel personnel
42 would be trained to assist the elderly or infirm. Wheelchairs, oxygen, and medical attention
43 would be available for any that require such aid. Fire suppression hardware within buildings
44 would include sprinklers, hydrants standpipes, and fire cabinets equipped as required by codes.
45 Standpipes and sprinklers would be supplied from elevated water tanks located on top of each

1 high-rise structure.

2
3 The exterior site of the complex would be designed with fire suppression in mind. Fire aisles
4 would be designated and policed to ensure speedy access of external fire suppression vehicles
5 and personnel. Buildings would be separated by adequate distances to prevent spread of fires.
6 Fire exits would be managed so that every building occupant would have a safe area of
7 evacuation, exit, and refuge. Each casino and hotel would have Fire Control Command Centers
8 that would be properly equipped and staffed to support the safe evacuation and rescue of
9 occupants as well as efficient fire suppression. A central fire equipment station would be
10 centrally located in the complex, near the central maintenance facility.

11
12 The fact that much of the occupied structure will be constructed on a pier surrounded by water
13 was taken into account in the design of the platform and the towers placed on the platform. The
14 towers are placed back from the edge of the platforms on which they are placed and will be
15 surrounded by ample space to allow fire-fighters to work to suppress the fire and to expedite
16 safe egress, rescue and removal of occupants. Fire exits will lead occupants down past the towers
17 to lower parking levels where they could be removed from danger. It would not be necessary to
18 use water-borne fire fighting equipment to suppress fires on the pier area.

19
20 A general review of the fire services and emergency medical services in Biloxi and the larger
21 three-county region is provided in Section 3.12. The Biloxi Fire Department has the capability to
22 adequately address the fire response needs of the existing casinos as well as those of the
23 Proposed Action and its alternatives. The proposed structures are typical of the numerous high-
24 rise casinos and hotels that already exist in Biloxi. To date, the fire department has responded to
25 a number of fires within the casinos and was adequately staffed and equipped to deal with those
26 events. The development of the proposed casinos, either at one location (Alternatives 2, 4, and
27 5) or at six dispersed locations (Alternative 3) should not hinder the ability of the department to
28 adequately respond to an emergency (personal communication, R. Beddingfield, Training
29 Officer, City of Biloxi Fire Department, MS, and A. Batstone, EDAW, November 19, 1999).
30 Based on this information, no significant differences exist between the alternatives as related to
31 their potential impact on fire response to casino resorts.

32 33 *No-action Alternative*

34
35 Under the No-action Alternative the current fire prevention, fire suppression and emergency
36 management procedures would continue to meet national, state and local requirements for fire
37 safety and risk management.

38 39 **4.15.4 Impacts on Hazardous Material Transport Accident Response**

40
41 The evacuation zone for a hazardous materials spill on the CSX railroad line is one mile, which
42 encompasses all properties from coast to coast on the Biloxi peninsula. Therefore, no differences
43 exist between Alternatives 2, 3, 4, and 5 as related to their potential impact on hazardous material
44 accident response. For this assessment of impacts, Alternatives 2, 3, 4, and 5 are considered
45 together and compared against the No-action Alternative. Table 4.15-2 identifies the potential

number of employees and guests that would be within the one-mile evacuation zone under each alternative.

Table 4.15-2
Hazardous Material Accident Evacuation Data*

Alternative	Approx. No. of Total Employees	Approx. No. of Hotel Rooms	No. of Employees On-Site	No. of Guests On-Site
No-Action Alternative	1,060	500	689	750
Alternatives 2, 3, 4, 5	13,000	7,050	8,450	10,575

*Assumptions: 75% hotel occupancy with 2 persons per room and 65% of total employees on-site at any given time at the casino resorts. No-action Alternative does not consider the number of existing employees at the six dispersed sites; employees and guests are for Broadwater site only.

Source: USACE, 1997; Destination Broadwater Additional Information Response from President Casinos, Sept. 28, 1999; staff analysis.

Alternatives 2, 3, 4, and 5

Under Alternatives 2, 4, and 5, the number of employees working at the proposed casino sites at any given time is estimated to be 8,450 while the number of guests on-site is estimated to be 10,575. These numbers reflect an additional 7,761 employees and an additional 9,825 guests placed in the evacuation zone over the No-action Alternative. Therefore, the number of evacuating persons would be approximately 19,025 in Alternatives 2, 4, and 5 compared with 1,439 for the No-action Alternative. The response time and logistics of evacuating guests and personnel would be correspondingly greater for Alternatives 2, 4, and 5 than for the No-action Alternative.

Under Alternative 3, the numbers of employees and guests to be evacuated would be the same as those for Alternatives 2, 4, and 5. However, evacuation of six separate sites could be less problematic for Alternative 3 than for Alternatives 2, 4, and 5 because the dispersion of the same number of guests and employees into six separate casinos would lessen the exposure for any given casino and offer a more diverse set of evacuation options, compared to evacuating a larger, high-density site from a single point of egress.

No-Action Alternative

The number of employees and guests estimated to occupy the existing Broadwater site under current conditions is shown in Table 4.15-2. Over time, more hotels and casinos are likely to be constructed in the Harrison County ROI and more employees may be added at the existing Broadwater site, increasing the number of employees and guests in the evacuation area over current conditions.

1 **4.15.5 Mitigation**
2

3 Impacts to emergency management attributable to the Proposed Action and its alternatives could
4 be reduced if the following mitigation measures were implemented:
5

- 6 • Add capacity to the critical highway link on State Highway 49 to aid in hurricane evacuation.
7
- 8 • Establish an evacuation protocol that assures closing the gaming areas and evacuating all
9 casino guests at least six hours prior to an evacuation order for hurricanes to ensure that
10 casino guests clear the critical link before queuing begins.
11
- 12 • Conduct a behavioral analysis for hurricane evacuations in order to refine the statistical
13 information and improve the management's response to evacuation events.
14
- 15 • Provide for a pre-arranged transportation mode and alternative guest accommodations to
16 assist hotel and casino guests who have special mobility needs and those without personal
17 cars to evacuate to areas of safe refuge in case of a major disaster. The buses owned by
18 casino operators may be an expedient means of transportation that could be employed with
19 proper provisions for readiness made through an evacuation plan coordinated with potential
20 host sites in Alabama, Louisiana, and upland areas of Mississippi.
21